1	1.	A method comprising:	
2		initializing to false a predicate that guards a speculative instruction in a software	
3		pipelined loop;	
4		executing at least one iteration of the software-pipelined loop, including an	
5		instruction that sets the predicate to true if an associated live-in value is consumed; and	
6		executing the speculative instruction in subsequent iterations of the software-	
7		pipelined loop.	
1	2.	The method of claim 1, wherein the instruction that sets the predicate true is gated by a	
2	stage predicate of the software-pipelined loop.		
1	3.	The method of claim 2, wherein executing - at least one iteration of the software-	
2	pipelined loop comprises executing the predicate setting instruction when the stage predicate		
3	true.		
1	4.	The method of claim 2, wherein the stage predicate is selected to delay execution of the	
2	specul	ative instruction until the live-in value has been consumed.	

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false a predicate other than a stage predicate.

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The method of claim 1, wherein initializing to false a predicate comprises initializing to

- 2 initializing a software-pipelined loop to deactivate a speculative instruction;
- 3 executing at least one initiation interval (II) of the software-pipelined loop;
- 4 activating the speculative instruction; and
- 5 executing subsequent IIs of the software-pipelined loop.
- 7. The method of claim 6, wherein initializing the software-pipelined loop comprises
  initializing as false a predicate that guards the speculative instruction.
- 1 8. The method of claim 7, wherein executing at least one II of the software-pipelined loop
- 2 comprises executing an instruction that determines a value for the predicate guarding the
- 3 speculative instruction.

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- 1 9. The method of claim 8, wherein activating the speculative instruction comprises
- 2 executing the speculative instruction if the predicate is true.
- 1 10. The method of claim 6, wherein the speculative instruction is a compare instruction and
- 2 initializing the software pipeline to deactivate the speculative instruction comprises initializing a

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- 3 rotating source register for the compare to a value for which a predicate determined by the
- 4 compare instruction is false.
- 1 11. The method of claim 10, wherein activating the speculative instruction comprises rotating
- 2 a value into the source register used by the compare to determine if the predicate is true.
- 1 12. The method of claim 7, wherein executing at least one II of the software-pipelined loop
- 2 comprises executing an instruction that activates the speculative instruction.
  - 13. A method for software pipelining a "while" loop comprising:
    - identifying a speculative instruction in the loop;
  - guarding the speculative instruction with a sticky predicate;
  - initializing the sticky predicate to false; and
    - inserting an instruction to set the sticky predicate true at a specified initiation
- 6 interval of the loop.

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- 1 14. The method of claim 13, wherein inserting an instruction comprises an instruction to set
- 2 the sticky predicate true when a live-in value targeted by the speculative instruction is consumed.

1 15. The method of claim 10, wherein the inserted instruction is a compare instruction that is 2 gated by a stage predicate. 1 16. The method of claim 15, wherein the inserted instruction evaluates the sticky predicate as 2 true when it is gated on by the stage predicate. 1 17. The method of claim 16, wherein the stage predicate is selected to activate the inserted 2 instruction once the live-in value is consumed. 18. An apparatus comprising a machine readable medium on which are stored instructions that may be executed by a processor to implement a method comprising: executing a stage of a software-pipelined loop that includes a speculative instruction, the speculative instruction being gated off by a sticky predicate; executing an instruction that sets the sticky predicate; and 6 executing the stage of the software-pipelined loop, including executing the 7 speculative instruction. 1 19. The machine-readable medium of claim 18, wherein the method further comprises

initializing the sticky predicate to false to gate the speculative instruction off prior to executing

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the software-pipelined loop.

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	L	20.	The machine-readable medium of claim 18, wherein executing an instruction that sets the
2	2	sticky	predicate comprises:
3	3		rotating a new value into a stage predicate that guards the sticky predicate setting
4	1		instruction; and
5	5		executing the sticky predicate setting instruction when the stage predicate is true.
			•
1	1	21.	A computer system comprising:
2 15			a processor to execute instructions; and
The little with the court of th	3		a memory to store instructions which may be executed by the processor to
## 4	4		implement a method comprising:
	5		executing an initiation interval of a software-pipelined loop that includes a
[ (	5		speculative instruction, the speculative instruction being gated off by a sticky
	7		predicate;
	3		executing an instruction that sets the sticky predicate; and
ç	9		executing a subsequent initiation interval of the software-pipelined loop,
10	)		including executing the speculative instruction.
1	1	22.	The computer system of claim 21, wherein the method further comprises initializing the

sticky predicate to false to gate the speculative instruction off prior to executing the software-

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pipelined loop.

- 23. The computer system of claim 22, wherein executing an instruction that sets the sticky 1 2 predicate comprises: 3 rotating a new value into a stage predicate that guards the sticky predicate setting instruction; and 4 5 executing the sticky predicate setting instruction when the stage predicate is true. 1 24. A computer system comprising: 2 a processor to execute instructions; and a memory to store instructions which may be executed by the processor to: initialize a software-pipelined loop to deactivate a speculative instruction; 5 execute at least one initiation interval (II) of the software-pipelined loop; activate the speculative instruction; and execute subsequent IIs of the software-pipelined loop.
- 1 25. The computer system of claim 24, wherein the processor initializes the software-
  - 2 pipelined loop by at least initializing as false a predicate that guards the speculative instruction.
  - 1 26. The computer system of claim 25, wherein the processor executes at least one II of the
  - 2 software-pipelined loop by at least executing an instruction that determines a value for the
  - 3 predicate guarding the speculative instruction.

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